

# Panasonic

# AVCCAM

## AG-AC90A

Memory Card Camera Recorder

(AG-AC90AP, AG-AC90AAN)

\*The microphone shown in the photo is an option.



AVCHD  
Progressive

DOLBY  
DIGITAL  
5.1 CREATOR

HDMI  
HIGH-DEFINITION MULTIMEDIA INTERFACE

SD  
XC



**AVCCAM 3-Year Warranty Repair Program\***

\* AG-AC90A users qualify for a 3-year warranty on repairs.

Visit the website for details: <[www.panasonic.biz/sav/pass\\_e](http://www.panasonic.biz/sav/pass_e)>

# Featuring a Wide-Angle/High-Powered Zoom Lens and High-Sensitivity BSI Type 3MOS Sensors, This Stylish AVCCAM Includes the Smooth Operation of Triple Manual Rings.

## Slide-Retractable LCD Touch Panel

This versatile LCD serves as a high-definition, approx. 1,152,000 dots monitor and menu-setting touch panel. When not in use, it slides into the handle front for extra mobility and safety. It also rotates 270 degrees vertically for easy high-angle, low-angle and self-interview shooting.

## Highly Functional Controls

The control panel offers both multifunctional versatility and easy operation. Frequently used functions have large, distinct buttons in an easy-to-recognize layout. Large audio level dials are also designed for both safety and operating ease.

## Large-Capacity Battery Included

A large-capacity 5,400 mAh battery comes included, to give you around 6 hours of continuous shooting in PH mode.

## Triple Manual Rings

Focus, zoom and iris rings are positioned on the lens barrel. This enables speedy and intuitive camera work.

## XLR Mic/Line Input

The AG-AC90A comes equipped with 2-channel XLR audio input terminals for external mic or line recording use. It also has a 48 V phantom power supply.

## 29.8 mm Wide-Angle 12x Zoom

The zoom lens combines F1.5 (at the widest angle) high speed and 29.8 mm (35 mm equivalent) wide-angle with high-powered 12x optical zooming. Nano Surface Coating minimizes ghosts and flaring.

Panasonic's AG-AC90A AVCCAM combines the high image quality, advanced functions and easy operation that professionals demand in a stylish, easy-to-handle design. It features an F1.5 lens that extends from 29.8mm wide-angle to 12x zoom, and high-sensitivity, high-image-quality (backside illumination type) 3MOS image sensors. In addition to high-quality professional PS/PH mode (1920 x 1080) recording, the AG-AC90A supports PM mode (1280 x 720) and low-bit-rate CS mode (720 x 480) for delivery over a network. When combined with an Eye-Fi card, it fits right into production workflows that use networks to transfer data files to PCs and upload to cloud servers. Other professional operating features include Triple Manual Rings (focus, zoom and iris), XLR Microphone/Audio Inputs, and remote terminals to provide the system capabilities that professional applications require.

# Shooting Angles, Image Quality, Mobility, Operating Ease – No Compromises in This

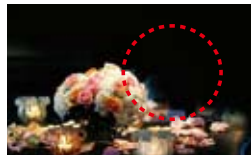


## 29.8mm Wide Angle to 12x Zoom Lens

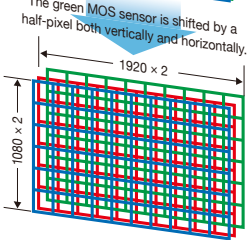
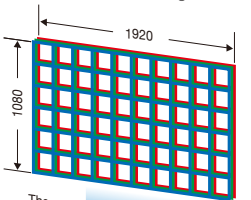
This high-powered zoom lens can be used in all areas from news gathering to image production field. It goes from 29.8 mm (35 mm equivalent) wide-angle to 12x zoom. Panasonic's unique Nano Surface Coating minimizes ghosts and flaring, and the high-speed F1.5 (at the widest angle) enables extremely clear image rendering.



General multi coating lens



Nano surface coating lens



4x dense pixel shifting technology (concept image)

## High-Sensitivity BSI Type 3MOS Sensors

Three (RGB) 1/4.7 type MOS image sensors have an effective pixel count of 2,680,000 pixels. In addition to high BSI (backside illumination) sensitivity and excellent 3MOS color reproduction, 4x dense pixel shifting technology achieves high resolution. This lets you record high-quality Full-HD (1920x1080) images even in dim lighting. The image processing circuit, which is tuned for professional use, produces highly natural gradation and detail.

## Three Manual Rings – Zoom, Focus, Iris

The lens barrel is equipped with manual rings for focus, zoom and iris to enable speedy and intuitive camera work.

## 5-Axis Hybrid Hand-Shake Correction

The AG-AC90A features 5-Axis Hybrid OIS (Optical Image Stabilizer/hand-shake correction). This powerful image stabilizer combines the advantages of both optical and electronic systems to ensure stable handheld shooting.

## Intelligent Zoom and Digital Zoom

Intelligent Zoom gives you seamless zooming up to 25x magnification while minimizing decreases in resolution. A 2x/5x/10x Digital Zoom is also featured. Combining the optical zoom and Intelligent Zoom, this provides an ultra-telephoto range up to 250x.

## Seven User Buttons

User buttons one to three are hardware buttons, and User buttons four to seven are touch panel controls. Seven functions out of a total of twelve (Push AF, Backlight Compensation, Spotlight Compensation, Black Fade, White Fade, ATW, ATW Lock, Digital Zoom, Histogram Display, Rec Check, Last Clip Delete, and Menu) can be allocated to these buttons.

## Focus Assist and Push AF

The Focus Assist (Focus in Red) button shows when your subject is in focus by outlining subject edges in red on the LCD monitor. Push AF activates the AF function while in Manual mode with the press of a button (allocated to an User button). This provides handy support for manual focusing.



Focus Assist

## Scene File Function for Advanced Image Quality Settings

The six preset scene settings allow immediate response to a variety of shooting situations. The following settings can be freely changed and saved over the preset values.

- **DRS (Dynamic Range Stretcher):** Suppresses blocked shadows and blown highlights by visually expanding the dynamic range. This function can be assigned to the user button.
- **7 Mode Gamma:** Allows selection from seven gamma curves: HD NORM/LOW/SD NORM/HIGH/B.PRESS/CINE-LIKE D/CINE-LIKE V.
- **Other settings:** H detail level, V detail level, detail coring and skin tone detail, chroma level, chroma phase, color temp and master pedestal, auto iris level, knee (LOW/MID/HIGH), matrix (NORM1/NORM2/FLUO/CINE-LIKE).

## Professional Camera Functions

- **ZEBRA Button:** Displays two zebra patterns (blown highlight warning) and a marker (brightness level percentage).
- **BARS Button:** Outputs a color bar image and test tone audio.
- **DISP/MODE CHK Button:** Shows mode settings at a glance.
- **Auto Slow Shutter:** Allows the shutter to automatically slow down to brighten dark scenes.
- **High-Speed Shutter:** Adjusts up to a maximum speed of 1/2000 sec.
- **White Balance:** Allows the selection from ATW, P3.2K, P5.6K or VAR (variable between P2.4K and P9.9K). Two manual settings (A/B) can be stored in memory.
- **iA Mode:** The AG-AC90A detects the shooting conditions and automatically switches to the optimal iA mode (Portrait, Landscape, Spotlight, Low Light, Normal).
- Displays various safety zone markers and a center marker.

## Professional AVCHD Support for a Variety of Modes

- **PS Mode:** Records Full-HD progressive (1080/50p) images compliant with the AVCHD Progressive standard.
- **PH Mode:** This AVCCAM professional mode supports 1920x1080 full-pixel images and switchable HD formats of 1080/60i, 30p and 24p.
- **HE/HA Mode:** Records 1080/60i images for an extended rec-time.
- **PM Mode:** Records 1280 x 720 pixel progressive HD images (720/60p). Ideal for usage of in sports coaching.
- **SA Mode:** Records SD (480/60i) with high image quality.
- **CS Mode:** Features a low rate of 3.5 Mbps for swift uploading to a cloud server. Records 720 x 480-pixel SD (480/60i) images.



### Dual Memory Card Slots with Direct Copy Function between Memory Cards

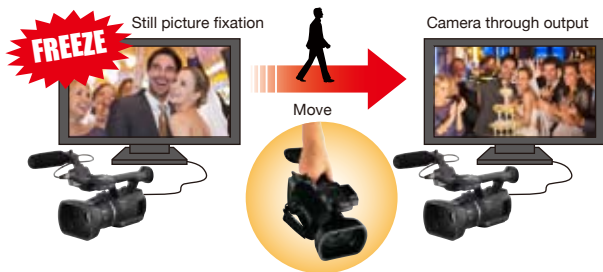
The slot to be used can be switched during recording. Auto-Switch Recording\*<sup>1</sup> lets you record images onto two memory cards consecutively, and Back-Up Recording\*<sup>2</sup> records the same images onto two different memory cards to increase reliability. Newly added slot-to slot file copy function allows you to organize files on-site using only a AG-AC90A camera-recorder..



\*1: Simple relay recording. When switching recording media, audio is interrupted for maximum 0.8 sec.  
 \*2: Rec Check and Last Clip Delete do not work during Back-Up Recording  
 \*3: Use SDXC/SDHC/SD memory cards with a SD Speed Class of 4 or higher.

### Freeze Frame

When the camera is being set up or the operator changes camera positions, a frame is captured and displayed as still image. This function allows you to prevent unwanted images from being captured and displayed on an external monitor.



### Versatile Recording Functions

- **Interval Rec:** Records one frame at a time in set intervals (1 sec, 10 sec, 30 sec, 1 min, 2 min). Ideal for observation, surveillance and other applications.\*
- **Pre Rec:** Prevents missed shooting opportunities by storing about 3 seconds of video and audio data in memory prior to pressing the Rec button.
- **Rec Check:** Lets you check the end of the most recently recorded clip with one-touch ease.
- **Last Clip Delete:** One-touch delete of the most recently recorded clip.
- The built-in SMPTE time-code generator lets you select the Drop Frame/Non-Drop Frame and Free Run/Rec Run modes and preset. UB (User Bit) is also provided.
- Still shots with 3-megapixel resolution. (Still shots can also be captured during video recording.)
- **Time Stamp:** Records the date and time together with the image. This is useful when recording observation images, events, evidence images, etc.

\*Up to a maximum of 12 hours, HA mode only, no audio recording.

### Slide-Retractable, High-Definition LCD Touch Panel

- High-definition 16:9 aspect ratio 8.8 cm (3.5 inches) LCD monitor with approx. 1,152,000 dots.
- Slides into the handle front for storage. Rotates 270 degrees for high-angle, low-angle and self-interview shooting (with Mirror mode).
- Menu settings and playback by touch panel operation.
- Various playback functions can be selected on thumbnail display, such as Pause, Fast Rewind, Fast Forward, Slow, Frame Advance, Skip, and Repeat.

### XLR Input and Other Professional Audio Features

In addition to a built-in 5.1-channel surround sound mic, the AG-AC90A features 2-channel XLR audio input terminals for external mic use. Input (Mic/Line) can be selected for CH1/CH2 independently, and a 48 V phantom power supply (ON/OFF) and level control are provided.

### Eye-Fi Card for Wireless Connection

The use of an Eye-Fi card (commercially available) enables wireless LAN connection and maximizes the use of networks, such as transferring files to a PC, smartphone or tablet, or uploading files to a data sharing site or cloud server. The AG-AC90A is equipped with an Eye-Fi card setting function and displays data transfer progress on the LCD/EVF.

\* Panasonic does not guarantee the functions (including wireless communication) of Eye-Fi cards with the product.  
 \* The Eye-Fi transfer function cannot be used during video recording.

### Professional Interfaces and Design

- **HDMI Output:** Digital output of video and audio signals to a wide variety of HD devices.
- **AV Multi Output:** Analog video and audio output. Output analog component video (component terminal), analog composite video (pin jack), and analog audio (L/R pin jacks) through the bundled cable.
- **USB 2.0 (DEVICE):** For transferring files to a PC.
- Remote terminals enable remote operation of iris, focus, zoom and Rec Start/Stop functions.
- The AG-AC90A has a well balanced center of gravity and a short body for nimble mobility.
- The upper part of the handle grip contains both the Rec Start/Stop button and a zoom speed control (three speed steps).
- A front tally lamp is provided (ON/OFF switchable).



Rear terminal

Side terminal

# The AVCCAM Series Makes Video Packaging and Internet Distribution\*1 Smooth and Easy.

The tapeless design means lower total costs, and unlike tape, AVCHD files require no digitizing\*2 and can be directly and quickly transferred\*3 to storage in a Windows PC or Mac. This makes it easier to use motion images in IT applications\*4 like content production, internet distribution\*1 and source material archiving. AVCHD's direct editing also saves time and effort in TV program production. AVCHD means lower costs for both media and equipment maintenance.

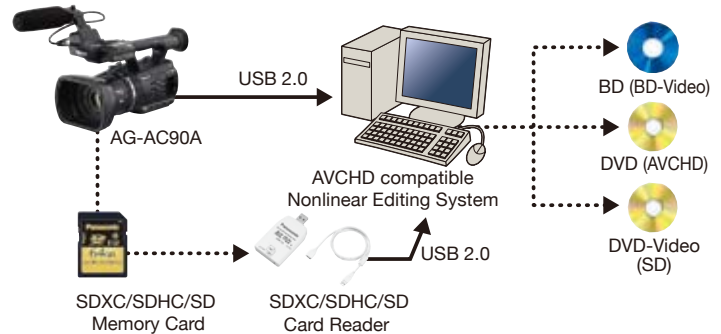
\*1: To distribute AVCHD files on the web, you may need to use a video distributing service that is operated by other web publishers supporting AVCHD. For real-time web distribution, a real-time video encoder that is supplied by other manufacturers may be required. \*2: Editing may require conversion to an intermediate codec, depending on the editing software. The conversion speed varies depending on the hardware specifications of the Windows PC or Mac, the software used for converting, and the file format being converted. \*3: Maximum speed: 22 MB/s (Using a Class 10 SDHC Memory Card. Speed depends on the hardware specifications of the Windows PC or Mac.) Some computers may not recognize the SDXC/SDHC Memory Card. If that occurs, use an SDXC/SDHC Memory Card Reader. \*4: AVCHD-compatible software is required. The minimum system requirements for using the software must also be satisfied.



## AVCHD Nonlinear Editing

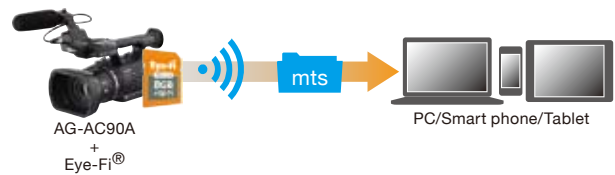
Compatible with many existing HD editing systems, AVCHD files can be transferred at high speed by using the USB 2.0 interface to connect the AVCCAM Series or an SDXC/SDHC/SD Memory Card reader to a Windows PC or Mac. This dramatically improves productivity when compared with the time-consuming task of digitizing.

\* Please see our website <<http://pro-av.panasonic.net/>> for information on the interoperation of nonlinear editing systems. Click on "Non-linear Compatibility Information." For more detailed information, please see the website of the relevant manufacturer.



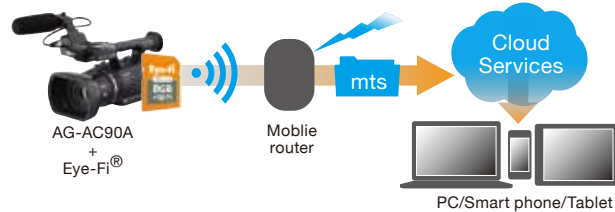
## • Eye-Fi Application (PC, smartphone, tablet)

In Eye-Fi Direct mode, files are transferred directly to a smartphone or tablet through the Eye-Fi card without going through an access point.



## • Eye-Fi Application (data sharing site, cloud server)

When connected to a broadband network via a wireless LAN or mobile router, files can be uploaded automatically (when uploading all files) or manually (when uploading selected files) to a data sharing site or cloud server.



## A Host of Software to Support Production

As of June, 2014

### AVCCAM Viewing Function of P2 Viewer Plus

(for Windows/Mac, Free Download)

The New P2 Viewer Plus software includes the ability to view AVCCAM files. AVCCAM files can be played from an SDHC/SDXC memory card or hard disk and saved to a PC (hard disk). Files can also be copied to an SDXC/SDHC memory card.



### AVCCAM Importer

(for Mac, Free Download)

AVCCAM Importer is a software for Apple Final Cut Pro 7 to enable direct editing of AVCHD\* “.mts” files without conversion. Since AVCCAM Importer is a plug-in component for Apple QuickTime, QuickTime Player can play AVCHD “.mts” files and other software based on QuickTime Framework can also handle AVCHD “.mts” files directly after installation of AVCCAM Importer on a Mac.



\*AVCCAM Importer supports the AVCHD files produced by AVCCAM products only.

### AVCCAM SD Card File Recovery (for Windows/Mac, Free Download)

The AVCCAM SD Card file recovery is a software for repairing files which were erased or formatted accidentally. It supports SDXC/SDHC/SD memory card.

\*This software can only be used with AVCHD, DV and JPEG clips recorded with a Panasonic AVCCAM series camera.

\*Note that it will not always be possible to repair the files using this software.

### AVCCAM Restorer

(for Windows, Free Download)

The AVCCAM Restorer is a software for restoring inconsistencies in video data recorded on an SDXC/SDHC/SD Memory Card.

\*This software can only be used with AVCHD clips recorded with a Panasonic AVCCAM series camera.

\*Note that it will not always be possible to restore the data using this software.

\*This software targets recorded data that has been damaged for restoration. It is not capable of performing processing to restore deleted data.



**CGA-D54**  
Lithium Ion Battery (5400mAh)



**AG-MC200G**  
XLR microphone



SDXC/SDHC/SD  
Memory Card



**AG-B23**  
Battery Charger  
AC cable included



**VW-LED1**  
LED Video Light



**VW-W4907H**  
Wideconversion Lens



**VW-LF49N**  
Filter Kit

#### Precautions for Using the SDXC Memory Card

- The SDXC Memory Card can be used for products that display the SDXC logo mark either on the product itself, or in the User's Manual. It cannot be used with products that are only compatible with SDHC/SD Memory Cards.
- How to confirm SDXC compatibility: Confirm compatibility by looking for the SDXC logo mark on the product or in the User's Manual, or check the information provided by the product manufacturer.
- When using the SDXC Memory Card with a computer: For a computer with Windows 7 OS, use the SDXC Memory Card via an SDXC-compatible USB reader/writer, or connect the SDXC Memory Card to an SDXC-compatible product via a USB terminal. If you want to use the SDXC Memory Card in a direct slot, be sure to check the information provided by the manufacturer for the computer that you plan to use, and follow the instructions therein.
- UHS-I (Ultra-High Speed I) is a speed class for SD Memory Cards. UHS-I compatible memory cards can be used in the AG-AC90A as SD Speed Class 10 cards.

## AG-AC90A Specifications

### General Specification

Supply Voltage:	DC 12 V (when the AC adaptor is used) DC 7.2 V (when the battery is used)
Power Consumption:	12.9 W
Operating Temperature:	0°C to 40°C (32°F to 104°F)
Operating Humidity:	10% to 80% (no condensation)
Weight:	Approx. 1.50 kg (Approx. 3.3 lb/main unit only) Approx. 1.78 kg (Approx. 3.9 lb/with battery and an SD card)
Dimensions (W X H X D):	160 mm x 195 mm x 350 mm excluding protruding parts (6-5/16 inches x 7-11/16 inches x 13-1/16 inches)

### Camera Section

Pickup Devices:	1/4.7 type 3MOS image sensor Effective pixels: Approx. 8,040K (Approx. 2,680K x 3)
Lens:	Auto Iris optical zoom (Full range AF) F value (focal length): F1.5 to F2.8 (Focal length; 2.84 mm to 34.1 mm) 35 mm equivalent: Motion picture/Still picture; 29.8 mm to 383.7 mm (16:9) Minimum focus distance: Approx. 3.5 cm (1.4 inches) (Wide) Approx. 1.2 m (3.9 feet) (Tele)
Filter Diameter:	49 mm
Zoom:	12x optical zoom, 25x i.Zoom, 2x/5x/10x digital zoom
Shutter Speed:	60i/60p/30p: 1/30 sec. to 1/2000 sec. (auto slow shutter ON) 1/60 sec. to 1/2000 sec. (auto slow shutter OFF) 24p: 1/24 sec. to 1/2000 sec. (auto slow shutter ON) 1/50 sec. to 1/2000 sec. (auto slow shutter OFF) at motion picture recording, manual mode
Image Stabilizer Function:	Optical (hybrid optical image stabilizer, active mode)
Minimum Illumination:	Approx. 3 lx (iA mode, 1/30 sec. shutter speed with auto slow shutter ON)

### Memory Card Recorder Section

Recording Format:	AVCHD version 2.0 compliant, AVCHD Progressive
Motion Picture Compression:	MPEG-4 AVC/H.264
Audio Compression:	Dolby Digital (5.1ch/2 ch)
Recording Mode:	*Please see the table below.

### Still Picture Recording Format:

JPEG corresponding (Design rule for Camera File system, based on Exif 2.2 standard)

Recording Media: SD Memory Card, SDHC Memory Card, SDXC Memory Card

### Video Output

AV Multi Output: Component video output level:  
Y: 1.0 V [p-p], 75Ω  
Pb: 0.7 V [p-p], 75Ω  
Pr: 0.7 V [p-p], 75Ω  
AV video output level:  
1.0 V [p-p], 75Ω

HDMI Output: HDMI™ 1080p/1080i/720p/480p

### Audio Input/Output

LINE: 2 ch (AV Multi terminal)  
HDMI Output: Dolby Digital/Linear PCM  
Headphones Output: 3.5 mm stereo mini jack  
XLR Input: XLR (3 pin) x 2 (INPUT1/INPUT2),  
LINE: 0 dBu  
MIC: -50/-60 dBu (switch with the menu)  
Microphone: 5.1 ch surround microphone  
(with zoom /focus microphone function) /stereo microphone

### Other Input/Output

USB: Reader function (No copyright protection support)  
Hi-Speed USB (USB 2.0), USB terminal Type Mini B  
Camera Remote: 2.5 mm diameter, super mini jack x 1 (ZOOM, REC S/S)  
3.5 mm diameter, mini jack x 1 (FOCUS, IRIS)

### Monitor

Monitor: 8.8 cm (3.5 inches) wide LCD monitor  
(Approx. 1152 K dots)  
Viewfinder: 0.61 cm (0.24 inches)  
wide EVF (Approx. 263 K dots equivalent)

### Included Accessories

Battery pack, Battery charger, AC adaptor, AC cable (x 2), Eye cup, Remote control (Battery built-in), CD-ROM (Operating Instructions), USB cable, AV multi cable, Lens cap, Shoulder strap, Microphone holder, INPUT terminal cap (2 caps), Microphone holder adaptor, Microphone holder screws

Weight and dimensions are approximate.  
Specifications are subject to change without notice.

### Recording Mode and Recording Time

Recording Mode	Bit Rate	Image Size (H x V)	Recording Format	Max. Recording Time*
PS Mode	Approx. 25 Mbps (Average) / Max. 28 Mbps	1920 x 1080	1080/59.94p	Approx. 10 hour 40 minutes*
			1080/59.94i	Approx. 12 hours*
PH Mode	Approx. 21M bps (Average) / Max. 24 Mbps	1920 x 1080	1080/29.97p	Approx. 12 hours*
			1080/23.98p	Approx. 12 hours*
			1080/59.94i	Approx. 16 hours*
HE Mode	Approx. 6 Mbps (Average)	1440 x 1080	1080/59.94i	Approx. 48 hours*
PM Mode	Approx. 8 Mbps (Average)	1280 x 720	720/59.94p	Approx. 38 hours*
SA Mode	Approx. 9 Mbps (Average)	720 x 480 (NTSC)	480/59.94i	Approx. 33 hours*
CS Mode	Approx. 3.5 Mbps (Average)	720 x 480 (NTSC)	480/59.94i	Approx. 82 hours*

\*When two 64 GB SDXC memory cards are used. The maximum continuous recording time is 6 hours regardless of the recording mode.

**PASS**  
Global Concierge for the Lifetime

# P2 Asset Support System

The free member's service program for P2HD/AVCCAM

## Extensive information for video professionals

### Thirsty for Knowledge?

No purchase necessary  
Information services for members

- ▶ The latest technical information
- ▶ FAQs, user's voices
- ▶ Tool download

### Always the best performance

Additional content with product registration

- ▶ Firmware, utility downloads
- ▶ Quick inspection, service history
- ▶ Newsletters

### Contact us from the following URL

Direct answers to your inquiries. Sign up now (no purchase necessary)

 [http://panasonic.biz/sav/pass\\_e](http://panasonic.biz/sav/pass_e)

# AVCCAM

## 3 year extended warranty program

1st year Basic  
Warranty

2nd year

3rd year with  
the warranty program



### Extended for free upon registration

\* Availability of this extended service program and service content may depend on country/region and model.

\* Not all repair work is covered by this extended warranty program.

\* AG-HCK10G optional AVCCAM camera-head is out of coverage of this service program.

Please refer to the latest Non-linear Compatibility Information, AVCHD Support, Download and Service Information, etc., at the following Panasonic web site.



<http://pro-av.panasonic.net/>

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# Panasonic®

Panasonic Corporation  
AVC Networks Company  
2-15 Matsuba-cho, Kadoma, Osaka 571-8503  
Japan  
<http://pro-av.panasonic.net/>

### [Countries and Regions]

Argentina +54 11 4122 7200  
Australia +61 (0) 2 9491 7400  
Bahrain +973 252292  
Brazil +55 11 3889 4035  
Canada +1 905 624 5010  
China +86 10 6515 8828  
Hong Kong +852 2313 0888  
Czech Republic: +421 (0) 903 447 757  
Denmark +45 43 20 08 57  
Egypt +20 2 23938151  
Finland, Latvia, Lithuania, Estonia +358 (9) 521 52 53  
France +33 (0) 1 47 91 64 00  
Germany, Austria, Switzerland +49 (0) 6103 313887  
Greece +30 210 96 92 300  
Hungary +36 (1) 382 60 60  
India +91 1860 425 1860  
Indonesia +65 6277 7784  
Iran (Vida) +98 21 2271463  
(Panasonic Office)+98 2188791102  
Italy +39 02 6788 367  
Jordan +962 6 5859801  
Kazakhstan +7 727 298 0891  
Korea +82 2 2106 6641

Kuwait +96 522431385  
Lebanon +96 11665557  
Malaysia +60 3 7809 7888  
Mexico +52 55 5488 1000  
Netherlands, Belgium +31 73 640 2729  
New Zealand +64 9 272 0100  
Norway +47 67 91 78 00  
Pakistan +92 5370320 (SNT)  
Palestine +972 2 2988750  
Panama +507 229 2955  
Philippines +65 6277 7284  
Poland +48 (22) 338 1100  
Portugal +351 21 425 77 04  
Romania, Albania, Bulgaria, Macedonia +40 (0) 729 164 387  
Russia & CIS +7 495 9804206  
Saudi Arabia +96 626444072  
Singapore +65 6277 7284  
Slovak Republic, Croatia, Serbia, Bosnia, Montenegro, Slovenia +421 (0) 903 447 757  
South Africa +27 11 3131622  
Spain +34 (93) 425 93 00  
Sweden +46 (8) 680 26 41  
Syria +963 11 2318422/4

Taiwan +886 2 2227 6214  
Thailand +662 731 8888  
Turkey +90 216 578 3700  
U.A.E. (for All Middle East) +971 4 8862142  
Ukraine +380 44 4903437  
U.K. +44(0)1344 70 69 13  
U.S.A. +1 877 803 8492  
Vietnam +65 6277 7284



JQA-0443



Factories of AVC Networks Company have received ISO 14001:2004-the Environmental Management System certification. (Except for 3rd party's peripherals.)